

REMARKS

As a preliminary matter, Applicants would like to correct the status of the claims because in Items 4 and 4a of the Office Action Summary, the Examiner incorrectly indicated that Claims 1-7 and 82-85 are pending in the application, and that Claims 8-81 are withdrawn. However, a correct statement of the status of the claims, prior to this Amendment, is as follows:

Item 4. Claims 1-25, 37-41, and 82-85 are pending in the application.

Item 4a. Of the above, Claims 8-25 and 37-41 are withdrawn from consideration.

As an additional Preliminary matter, Applicants respectfully request clarification of the status of Claims 4 and 5. More specifically, in the July 13, 2009 Office Action, the Examiner indicated that Claims 4 and 5 have been allowed. Further, in the March 8, 2010 Office Action, in the first sentences of Paragraph 3 (page 3), Paragraph 4 (page 4), and Paragraph 2 (page 6), the Examiner fails to include Claims 4 and 5 in any of these rejections. However, in the detailed remarks on page 4 (line 15) and page 5 (line 12), the Examiner appear to refer to Claims 4 and 5 in these rejections. Accordingly, clarification of the status of independent Claim 4 and associated dependent Claim 5 is respectfully requested.

Also, Applicants respectfully request entry and consideration of this after final amendment because the only claim changes being made are the cancellation, without prejudice, of Claims 83-84. Thus, the proposed claim changes do not raise new issues that would require further search and consideration.

In the Final Office Action, the Examiner objected to the drawings as allegedly not showing the step of “combining, **within a single frame**, a higher-luminance pixel, which is a pixel that is driven at a higher luminance than luminance data of an image to be displayed, and a lower-luminance pixel, which is a pixel that is driven at a lower luminance than the luminance data” (emphasis added), as recited in independent Claims 1, 83 and 84. Applicants respectfully traverse this rejection.

In response, the Examiner’s attention is directed to Applicants’ Figures 7A and 7B, which show how higher-luminance pixels and lower luminance pixels¹ are combined in a single frame. For example, Applicants’ Figure 7A shows how in Frame 1 there are four (4) higher-luminance pixels (which are un-shaded pixels, including the pixel designated as “5”) that are combined with twelve (12) lower luminance pixels (which are the shaded pixels). Thus, as “Frame 1” designates a single frame, this figure shows the feature at issue. Similarly, Frames 2-4 of Figure 7A also each show a single frame, and each of these additional frames (2-4) also shows an example of a situation in which higher luminance pixels are combined with lower luminance pixels in a single frame.

Applicants’ Figure 7B shows additional examples of situations in which higher luminance pixels and lower luminance pixels are combined within a single frame. More

1. It should be noted that the terms “higher luminance pixel” and “lower luminance pixel” do not merely refer to bright and dark pixels, respectively, but instead refer to a pixel that is of higher luminance than a corresponding pixel of the unprocessed original image or is of lower luminance than a corresponding pixel of the unprocessed original image, respectively. *See e.g.*, Applicants’ Specification as originally filed, pages 17-18.

specifically, Figure 7B shows four examples of single frames that each include both higher and lower luminance pixels in a single frame.

Accordingly, as it has been shown that the step of “combining, within a single frame, a higher-luminance pixel, which is a pixel that is driven at a higher luminance than luminance data of an image to be displayed, and a lower-luminance pixel, which is a pixel that is driven at a lower luminance than the luminance data” (emphasis added), is adequately shown in the drawings of the instant application, Applicants respectfully request the withdrawal of this objection to the drawings.

Claims 1-3, 6, 7, and 82-85 stand rejected under 35 U.S.C. §112, first paragraph, as allegedly failing to comply with the enablement requirement. More specifically, the Examiner asserts that the step of “combining, within a single frame, a higher-luminance pixel, which is a pixel that is driven at a higher luminance than luminance data of an image to be displayed, and a lower-luminance pixel, which is a pixel that is driven at a lower luminance than the luminance data” (emphasis added) of Claims 1, 83 and 84 is not sufficiently enabled in the instant Specification. Applicants respectfully traverse this rejection.

As mentioned above, Applicants’ Figures 7A and 7B each show four different examples of situations in which higher and lower luminance pixels are combined within a single frame. Further, these figures are described on pages 28 and 29 of the Specification as originally filed.

Additionally, Applicants' Figure 1B also shows another example of a situation in which higher and lower luminance pixels are combined within a single frame, as compared with Applicants' Figure 1A. More specifically, Applicants' Figure 1A shows a single frame with nine pixels of an original unprocessed image. Applicants' Figure 1B shows a single frame that also includes nine pixels, but where pixel 1a is a higher luminance pixel (*i.e.*, higher than the luminance of the corresponding pixel in the original, unprocessed image of Figure 1A) and where pixels 1b are lower luminance pixels (*i.e.*, lower than the luminance of the corresponding pixels in the original, unprocessed image of Figure 1A). In Figures 1A and 1B, higher luminance is indicated by lack of shading (such as pixel 1a of Figure 1B), lower luminance is indicated by dark shading (such as pixels 1b of Figure 1B), and the original luminance is indicated by light shading (such as pixels 1 of Figure 1A). Figures 1A and 1B are described on pages 17-18 of the Specification as originally filed.

In light of the above comments, Applicants respectfully request the withdrawal of this §112, first paragraph, rejection, as it has been shown that the Specification, as originally filed, adequately enables the step of "combining, within a single frame, a higher-luminance pixel, which is a pixel that is driven at a higher luminance than luminance data of an image to be displayed, and a lower-luminance pixel, which is a pixel that is driven at a lower luminance than the luminance data" (emphasis added) of Claims 1, 83 and 84.

Claims 1-3, 6 and 82-85 stand rejected under 35 U.S.C. §103 as being unpatentable over United States Patent No. 7,205,970 to Kim et al. in view of United States Patent Application Publication No. 2002/0118153 to Kimura. Although not listed in the

summary sentence of this rejection on page 4 (lines 13-14) of the Final Office Action, it appears as though the Examiner also intended to include Claims 4 and 5 in this §103 rejection. Accordingly, Applicants will respond with remarks on Claims 4 and 5 and well. However, as mentioned above, clarification on the status of Claims 4 and 5 is respectfully requested. For the reasons set forth below, Applicants respectfully traverse this rejection.

Applicants respectfully submit that the cited references, alone or in combination, fail to disclose or suggest an image processing method in which a higher luminance pixel (*i.e.*, higher than the luminance of the original, unprocessed image data for that pixel, and not merely just higher than adjacent pixels) and a lower luminance pixel (*i.e.*, lower than the luminance of the original, unprocessed image data for that pixel, and not merely just lower than adjacent pixels) are combined within a single frame, and further where the following step is performed “determining . . . an area ratio of the higher luminance pixel and the lower luminance pixel so that a luminance can be obtained substantially equal to a desired luminance based on the luminance data,” as defined in independent Claim 1.

In the Final Office Action, the Examiner correctly acknowledged that the Kim et al. reference fails to disclose or suggest the step of determining the area ratio. Accordingly, the Examiner relied upon the Kimura reference for this feature. However, as described below, the combination of the Kim et al. reference and the Kimura reference fails to include, *inter alia*, a step of “determining . . . an area ratio of the higher luminance pixel and the lower luminance pixel so that a luminance can be obtained substantially equal to a desired luminance based on the luminance data,” as defined in independent Claim 1.

The Kimura reference relates to the use of a method in which a plurality of sub-pixels make up each pixel, where each of those sub-pixels may be set to an on-state or an off-state, and the grayscale level is based on a ratio of the total area of all sub-pixels (within a pixel) to the total area of all sub-pixels in the on-state (within a pixel). *See e.g.*, Kimura, paragraphs [0008] and [0009]. In one of the embodiments described in the Kimura reference, the pixel is divided into two sub-pixels, and each sub-pixel is of a different area, which allows for four grayscale levels to be obtained from the use of only a two-bit data signal. *See* Kimura, paragraphs [0041] – [0046]. For example, if the larger area sub-pixel is designated as “L” and the smaller area sub-pixel is designated as “S,” the following grayscale levels (in order from brightest to darkest) can be obtained: 1. (L_{ON} , S_{ON}); 2. (L_{ON} , S_{OFF}); 3. (L_{OFF} , S_{ON}); and 4. (L_{OFF} , S_{OFF}). One of the features of the Kimura reference is that each of the sub-pixels are only set to be either ON (maximum luminance) or OFF (zero luminance). *See e.g.*, paragraphs [0007], [0015] and [0023].

In contrast, in the method of independent Claim 1, the area ratio is based on the areas of the higher luminance pixel and the lower luminance pixel (where the higher luminance pixel is a pixel that is driven at a higher luminance than the luminance data of an image to be displayed, and the lower luminance pixel is a pixel driven at a lower luminance than the luminance data). Thus, in the method of Claim 1, the ratio is based on the areas of pixels that are in the on-state, but are driven at either a higher voltage or lower voltage than the voltages of the original, unprocessed image. This is a distinction over the ratio of the Kimura reference, which is based on total pixel area to the area of only those in the on state.

Accordingly, for at least this reason, Applicants respectfully request the withdrawal of this §103 rejection of independent Claim 1 and associated dependent Claims 2, 3, 6, 82 and 85.

With regard to independent Claim 4, Applicants respectfully submit that the cited references, alone or in combination, fail to disclose or suggest an image processing method that includes, *inter alia*, a step of “determining . . . an existence ratio of the higher luminance frame and the lower luminance frame so that a luminance can be obtained substantially equal to a desired luminance based on the luminance data, wherein the existence ratio is a ratio of a number of higher luminance pixels versus a number of lower luminance pixels in the frame.” The Examiner correctly acknowledged that the Kim et al. reference lacked the claimed existence ratio. Accordingly, the Examiner relied upon the Kimura reference for this feature. In the Final Office Action, the Examiner asserted that the same features of the Kimura reference that satisfied the “area ratio” of Applicants’ Claim 1 also satisfied the “existence ratio” of Applicants’ Claim 4. However, for similar reasons to those discussed above, Applicants respectfully submit that the “existence ratio” of Applicants’ Claim 4 is different from the ratio of the Kimura reference. For example, the existence ratio is a ratio of higher luminance pixels to lower luminance pixels (where a higher luminance pixel is a pixel that is driven at a voltage that results in a higher luminance than the luminance data of an image to be displayed, and the lower luminance pixel is a pixel driven at voltage that results in a lower luminance than the luminance data). Thus, neither the numerator nor the denominator in the existence ratio of Claim 4 includes the total area of all sub-pixels within the pixel (regardless of their luminance status) or the total area of the sub-

pixels in the on-state, as does the ratio of the Kimura reference. Accordingly, as the existence ratio of Applicants' Claim 4 is completely different from the ratio of the Kimura reference, Applicants respectfully request the withdrawal of this §103 rejection of independent Claim 4 and associated dependent Claim 5 for at least this reason.

With regard to independent Claims 83 and 84, Applicants have cancelled these two claims, without prejudice, thereby rendering this rejection moot with respect to these two claims.

Claim 7 stands rejected under 35 U.S.C. §103 as being unpatentable over Kim et al. in view of Kimura and further in view of United States patent No. 7,133,101 to Koma. Applicants respectfully traverse this rejection.

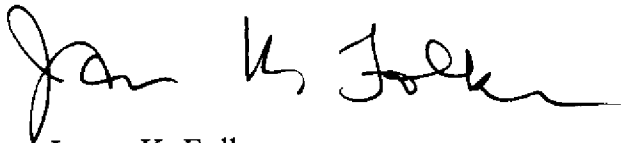
Claim 7 depends, indirectly, from independent Claim 1, and therefore includes all of the features of Claim 1, plus additional features. Accordingly, Applicants respectfully request that this §103 rejection of dependent Claim 7 be withdrawn considering the above remarks directed to independent Claim 1, and also because the Koma reference does not remedy the deficiencies discussed above, nor was it relied upon as such.

For all of the above reasons, Applicants request reconsideration and allowance of the claimed invention. Should the Examiner be of the opinion that a telephone conference would aid in the prosecution of the application, or that outstanding issues exist, the Examiner is invited to contact the undersigned attorney.

If a Petition under 37 C.F.R. §1.136(a) for an extension of time for response is required to make the attached response timely, it is hereby petitioned under 37 C.F.R. §1.136(a) for an extension of time for response in the above-identified application for the period required to make the attached response timely. The Commissioner is hereby authorized to charge fees which may be required to this application under 37 C.F.R. §§1.16-1.17, or credit any overpayment, to Deposit Account No. 07-2069.

Respectfully submitted,

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July 7, 2010

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